Date: Sun, 9 Oct 94 04:30:18 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: List
Subject: Ham-Ant Digest V94 #337
To: Ham-Ant

Ham-Ant Digest   Sun, 9 Oct 94   Volume 94 : Issue 337

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: Sat, 08 Oct 1994 22:39:23 GMT
From: rkenner@kuentos.guam.net (Rick H. Kennerly)
Subject: AEA Isoloop

I've been using an ISOLOOP for three years out here in the pacific. In
fact, I've been using it to run a net (Pacific InterIsland Net 14.315
0800z) and get out pretty well--Alaska to New Zealand, Thailand to
Pitcairn Island almost every night, but the solar numbers are killing
20m. There are a few dead spots, but it gets the job done on 80 or so
watts.

Mine is outdoors (everyone thinks it some sort of TV ant.) only 5 meters
off the ground. The tropical sun is killing the plastic housing and it
is becoming brittle. The mounting "ears" have snapped off and I've used
hose clamps to keep it from shimmying down the pole.

I'd prefer both the ISOLOOP and a LongWire if I were you. Particularly as

the sunspot cycle kills 20 m.

Rick, NH2F

--
Rick Kennerly.....Rick's Rule
"It's better to work shorthanded
than to work with the wrong person."

Date: Thu, 06 Oct 1994 19:43:04 -0600
From: holdwick_marc@macmail1.cig.mot.com (Marc Holdwick)
Subject: How to make hole for mobile antenna?

In article <941005015253135@n9csa.com>, kevin.schallmo@n9csa.com (Kevin Schallmo) wrote:

> The drill bit you need is called a "Uni-bit" and they sell for about
> $15-$25 depending on the size. I suggest the larger one, it makes a
> much cleaner hole when installing a roof mount.

Why make a BIG (3/4 inch) hole when you can make a 3/8 inch one? Max-Rad makes a NMO mount that mounts in a 3/8 inch hole over the "standard" 3/4 inch hole. R&L Electronics in Ohio and a few other ham shops sell their products. Send me mail if you have trouble finding them.

Marc Holdwick - N8KWX

Date: 8 Oct 1994 09:16:03 -0400
From: jimn0oct@aol.com (JimN0OCT)
Subject: Need help with G5RV

In article <374f4p$6ct@unet.net.com>, johng@yakutat.net.com (John Gratton) writes:

We've been working on getting our company station going again. And one of the hurdles has been our G5RV inverted V. When we first put the radio on it, after a year or so of non use, it seemed to be reasonably resonant on at least some part of 40 meters (SWR < 3:1) and to be honest, we didn't check much else. But the other day I was trying it and the SWR was very high.

We pulled the antenna down (it's suspended from a 25 foot tower on

the roof) and rebuilt it somewhat. We found an open in one side of
the 300 ohm twin lead so we replaced that and resoldered all the
connections.

After re-installing the antenna, we find it has an SWR of 3.5:1
on 40 meters. However, that's the best it will do. On 80 and 20
meters the SWR is very high (>10:1).

The construction is as follows, there is a length of 50 Ohm coax
run into 30 ft of twin lead. Just before the twin lead, there
are a number of ferite beads on the coax (maybe 8 inches worth).
The twin lead runs to an insulator with ~51 ft of wire off each side.

Now, this antenna is not of my design nor is it of my understanding.
It was on the roof from the previous club members so we're trying
to use it. Is there anyone who has direct experience with the G5RV that
can a) tell us how this thing is supposed to work in as fine
detail as possible, and b) tell us if there is something wrong with
the design. (note, directing us to the dumpster would be fine, but please
offer an alternative).

My advice would be to get an antenna tuner. The G5RV is not resonant on
all bands--it's best resonance is 20 meters, if I remember correctly. Buy
or build a T-match tuner, and you are all set. Run the coax from the
antenna to the tuner, then coax from the tuner to the rig. Use an SWR
meter and keep records of tuner settings for each band.

Hope that helps.

73, jim n0oct

Date: 8 Oct 1994 11:11:58 -0400
From: jimh@w8hd.org (Jim Hebert)
Subject: Need help with G5RV

jimn0oct@aol.com (JimN0OCT) writes:

>My advice would be to get an antenna tuner. The G5RV is not resonant on
>all bands--it's best resonance is 20 meters, if I remember correctly.

That is correct; at 14 MHz the 102 ft antenna is three half-waves. The
feedpoint impedance at the center is "resonant" (i.e. mainly resistive)
and should be around 100 ohms (or less for lower antennas).

Again, at 14 MHz the 30 feet or so of 300 ohm line is 1 wavelength long. This means that it reflects the impedance it sees at the far end. Thus the antenna present to the coax a principally resistive load with approximately 100 ohm resistive component.

At 14 MHz the vswr should be 2:1 or less. Any feedline loss will tend` to reduce the observed vswr at the transmitter.

On other amateur bands, the antenna is not precisely resonant, and you will encounter considerable reactive components at the feedpoint.

The G5RV was made popular in the U.S. by a New Englander named Mursch, who sold the Mursch Transmatch (a derivative of the ARRL's `Ultimate Transmatch`). If featured a roller-tuned inductor that Mursch, in typical yankee fashion, made himself when unable to get good pricing from suppliers like E.F. Johnson.

Since the Mursch Transmatch was geared to unbalanced feeds, it worked well with the G5RV design. With a G5RV and the Mursch Transmatch you could have an "all band" antenna that was fed with 50-70 ohm coax.

When Mursch began selling the G5RV antenna along with his Transmatch, many old timers were shaking their heads at his heretical marketing: the idea that a radio amateur would "buy" a wire antenna instead of making it himself seemed blasphemous. Radio amateurs "made" their antennas, espcially wire ones;they did not buy them pre-made.

Of course. Mursch was way ahead of his time. In the late 1960's he was selling his pre-made G5RV like hotcakes.

I can't say for sure, but Mursch may have had some "value-added" in his G5RV design. The performance of the antenna can be tweaked by careful choice of the length and impedance of the ribbon feeder. He may have found a nice combination.

He also featured a "ferrite balun", no doubt based on some erroneous design that was popular back then (-- this was pre Jerry Sevick!) I can easily imagine that the balun probably added at least a dB of loss to the whole system on those band where the feed was reactive and hence it tended to make the vswr look better than it really was.

The other attraction of the G5RV is that its length is a little shorter than a full halfwave at 3.5 MHz; many city-lot bound radio amateurs appreciated the shorter length.

When I lived in Stratford, Connecticut in 1972-73, I had a G5RV (that I built myself!) and it worked well for me. At least it did when it was up; my next-door neighbor was suffering from

Hi-Fi interference and the jerk, instead of saying anything about it,
was cutting the antenna down about once a week!

Best regards,

Jim Hebert
K8SS

--

jimh@w8hd.org "In the nuclear winter, all sunsets <-- who
Jim Hebert, K8SS will be beautiful" said that?

Date: 8 Oct 1994 17:11:18 GMT
From: Cecil_A_Moore@ccm.ch.intel.com
Subject: Need help with G5RV

In article <374f4p$6ct@unet.net.com> johng@yakutat.net.com (John Gratton) writes:
>
>We've been working on getting our company station going again. And
>one of the hurdles has been our G5RV inverted V.

>Is there anyone who has direct experience with the G5RV that
>can a) tell us how this thing is supposed to work in as fine
>detail as possible, and b) tell us if there is something wrong with
>the design. (note, directing us to the dumpster would be fine, but please
>offer an alternative). >John Gratton

Hi John, A number of us have been down that road and you can double your
power output on some bands by eliminating the coax. G5RV, himself, in one
of his latest articles recommended elimination of the coax. Replace the
present coax and "matching section"(ha ha) with ladder-line or open-wire
transmission line. If you have a husky antenna tuner with a balanced
output (like the MFJ-986) use it to feed the ladder-line. If you have
a 300w antenna tuner (like the MFJ-949) you need a huskier balun, like
the Amidon HBHT200. Make the coax run between the antenna tuner and the
balun as short as possible (use RG-8 or better). Make the top section
horizontal. It does not work well as an inverted-V on the higher bands
because of the cloverleaf radiation patterns.

The original 102 ft G5RV was designed for 20m and the 30ft matching
section transformed the 125-j35 (ELNEC) impedance of the 102 ft top
section to close to 50 ohms, a good match for coax. It does not do that
on any of the other bands except by accident. On some bands, like 17m,
the SWR changes along the coax because of the losses in the RG-58.

Before anyone wastes bandwidth saying that SWR doesn't change, take a look at the graphs at the end of the transmission line chapter in the ARRL Handbook for lossy coax (like RG-58) and high (10/1) SWRs.

Note that above the frequency where the top section is 10/8 wavelength, the radiation pattern becomes a cloverleaf. At 10/8 and below, the pattern is two lobes, broadside. At 10/8 the antenna has about 3db gain over the same antenna used as a resonant half wave dipole at a lower frequency.

I trimmed mine from 102ft to 88ft. That gives me 9dbi broadside gain on 20m and 8dbi cloverleaf gain on 17m covering most of the world on those two presently best DX bands.

Hope this helps, it's based on lots of years of experience and measurements.

--
73, Cecil, KG7BK, OOTC (All my own personal fuzzy logic, not Intel's)

Date: 8 Oct 1994 18:51:07 GMT
From: grizzarv@indirect.com (Robert V. Grizzard)
Subject: Radio Shack Antennas?

Mike Basinger (dbasinge@nickel.ucs.indiana.edu) wrote:
: I'm thinking about buy an car antenna for my HTX-202. Are the antennas
: they sell at Radio Shack any good, or are they basically junk?

I'm using a Larsen Kulrod on a permanent mount for 2 meters. It's a 5/8 wave with what may well be a gimmick; i.e., the copper-plated stainless steel whip. Despite this (or maybe because of it?), it has worked well for me for 3 years.

Newtronics makes several 2 meter mobile antennas - including my personal favorite for fringe simplex, the CG-144. It is a 5/8 wave over 1/4 wave with a *huge* phasing coil in the middle. It's over 7 feet long, and does work exceptionally well.

I've never used the Radio Shack 2 meter antenna so I can't say how well they do the job. I do know you'd have a hard time changing my mind about that Larsen.

de kg7yy

Date: Sun, 9 Oct 1994 07:35:40 +0000
From: G3SEK@ifwtech.demon.co.uk (Ian G3SEK)
Subject: Short radials on a vertical ant.

In article: <01HHZOP38P769UMFQD@ACAD.FANDM.EDU> CCS_MAH@admin.fandm.EDU (Mark Hemlick Ph. D.)
writes:

>... Les Moxon, G6XN, in his book "HF Antennas for All Locations" writes
> extensively about physically short radials and counterpoises. In sum, he
> says that it is pointless to construct a "resonant" radial system, 1/4 wave
> radials should be avoided, and that one can get good results from "short,
> inductively loaded counterpoises". He states that he got good results on
> 14 mhz with four 40 in. radials commonly loaded with a 3 microH coil (6
> turns, 3 in. diameter, 1 in. long, probably #12 or 14 wire). He goes on to
> say:"a good match at 14 mhz can be obtained by overwinding with a
> single-turn coupling cois spaced about 1/4 in from the main winding." (p
> 45). I'm not exactly sure what this second statement means. Is he saying
> that the vertical radiator is coupled to the radial system by this method?

No, the base of the vertical radiator is connected directly to the top of the loading coil. By adding a separate coupling winding connected to the feedline, you're also using the loading coil as the secondary of a transformer to couple the RF energy into the antenna. The one-turn primary winding should be over the top part of the loading coil, nearest to the base of the vertical.
>
> Anyway, a few questions:
>
> 1. Anyone have any experience with using short radials, inductively loaded
> or not?

Yes, I tried Moxon's system and it works. The only disadvantages are that the bandwidth of the short loaded counterpoise is narrower than that of the quarter-wave radiator itself, and there will be losses in the loading coil (same problems as with short loaded whip antennas).

> 2. Could Moxon's system be used with the AV5?

Suppose so, subject to the rest of the points in this reply. You'd also need a separate loaded counterpoise for each band, though these could all be connected together at the base of the vertical. Your antenna would then have a trapped vertical section like Fig 11.14d (edition 1, may be different in edition 2) and multiple T-shaped counterpoises like Fig 11.14c.
Or you could use identical pairs of quarter-wave radials for some bands and loaded counterpoises for others.

It's very easy to experiment with HF antennas, so why not try several options?

> 3. Do Moxon's arguments "make sense" or is he a crank?

G6XN certainly knows his antennas and his ideas do make sense - eventually.
But his book is notoriously difficult to understand. Even other antenna experts
say so, so it's tough going for the rest of us!

(This isn't the first time I've tried to explain G6XN's ideas in simple language,
though ascii email isn't exactly the best medium for the message. You can't draw
pictures and it's hard to wave your hands while typing.)

G6XN is quite correct to say that two things need to be avoided in so-called
"groundplane" vertical antennas which use elevated wire radials.
These are radiation from the radials, and radiation from currents flowing on the
outside of the coax.

Remember that only the vertical part of the antenna is intended to radiate.
RF currents do flow in the radials, but their radiation is intended to
to cancel out in the far field. In effect, the radials should be acting as a
non-radiating counterpoise against which the vertical, radiating part of the
antenna is fed.

No current should be flowing on the outside of the coax feedline, because that
makes the feedline part of the radiating antenna system, which is usually
not what you intend. Because HF vertical antennas are inherently asymmetrical
with respect to ground, it can be very difficult to choke unwanted RF currents off
the outside of the feedline. The link-coupled arrangement mentioned earlier
can help considerably because there is no direct path for unwanted RF currents
to couple to the outside of the feedline (which normally exists when the coax is
connected directly between the base of the vertical and the top of the radials
or counterpoise).

G6XN's specific objection to conventional resonant (quarter-wave) radials is that
it's very difficult to equalize the currents in them, which is a precondition for
their far-field radiation to cancel out.

That's why he advocates counterpoises that are physically short, 1/8 wavelength
max,
and thus have to be loaded to bring them to resonance. A typical G6XN counterpoise
has the loading coil connected to the exact center of a straight wire to make two
identical short elements connected back-to-back. This system does not radiate,
because the RF current coming out of the loading coil divides equally between the
two elements and flows away from the center in opposite directions; thus the
far-field radiation cancels out.

Don't get either G6XN or me wrong. Conventional radials do work - obviously -
but in many cases they are probably contributing to the overall radiation pattern
of the antenna, which is not what they're intended to do.

>
> 4. I was wondering...could I use my old cb magmount as an inductively
> loaded counterpoise for a 10 meter vertical by cutting off it's feedline
> and connecting its center conductor to the shield of the 10 meter vertical
> feed?

No, because after you've resonated the system by cutting down the CB antenna,
you've made an asymmetrical vertical dipole. You haven't done anything to
prevent the "counterpoise" part from radiating. It will work, of
course, but it won't be the antenna you were setting out to make.

Sorry for the long reply. I didn't have enough time to write a short one :-)

 73 from Ian G3SEK | Editor, _The_VHF/UHF_DX_Book_
 Abingdon, England |
 g3sek@ifwtech.demon.co.uk | "In Practice" columnist for RadCom (RSGB)

Date: 9 Oct 1994 02:29:20 GMT
From: Rush Johnson <73140.1516@CompuServe.COM>
Subject: SWL Antenna for Attic

I would like to hear some suggestions on a good SWL antenna that
I could build/buy to put in my attic. The attic is about 30 by
50 feet in dimensions.

Date: Sat, 8 Oct 1994 18:28:52 GMT
From: gcouger@jsun.okstate.edu (Gordon Couger)

References<1994Oct5.140644.23655@arrl.org> <373266$30m9@info2.rus.uni-
stuttgart.de>, <1994Oct7.223912.2532@arrl.org>
Reply-To: Gordon Couger <gcouger@olesun.agen.okstate.edu>=
Subject: Re: Feeding Yagis

In article <1994Oct7.223912.2532@arrl.org>,
Zack Lau (KH6CP) <zlau@arrl.org> wrote:
>DL5UH moritz@ipers1.e-technik.uni-stuttgart.de wrote:
>: >Yes, when cost is no object, the preferred method is to bring it out behind
>: >the reflector.
>
I just modeled a 2 element Yagi for vertical use with the coax running down
the inside of one of the driven elements. It is fed off center to match 50

ohms. I will post the results when I get it built.

Gordon AB5Dg

Gordon Couger
Biosystems & Agricultural Engineering
Oklahoma State University
114 Ag Hall, Stillwater, OK 74074
gcouger@olesun.agen.okstate.edu 405-744-9763 day 624-2855 evenings
    I do not speak for my employer

End of Ham-Ant Digest V94 #337
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